(DMSIT 21)

M.Sc. DEGREE EXAMINATION,
DECEMBER 2019.
Second Year
Information Technology
SOFTWARE ENGINEERING

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions.

1. Write about Spiral model with neat sketch and also explain how it differs from Software Prototyping model.

2. What is Software Requirement Specification (SRS)? Discuss about functional and nonfunctional software requirements in detail?

3. Explain in detail the design issues while designing User Interface.

4. What is Black box testing? Explain various techniques to carry out black box testing and also give its advantages and disadvantages.

5. Explain the differences between project metrics and process metrics.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions.

6. Write about the fundamental activities of a software process?

7. Briefly explain Negotiating and validating requirements.

8. Explain about class based component modeling.

9. Describe three characteristics for the evaluation of good design.

10. What is a cohesion? Write about different types of Cohesion?

11. Explain the testing procedures for boundary conditions.

12. Write about alpha and beta testing.

13. Explain about software quality metrics.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. Define software product.

15. What is meant by software prototyping?

16. What are the approaches of debugging?

17. Define unit testing.

18. What is SRS document?

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(DMSIT 22)

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

Second Year

Information Technology

PROGRAMMING WITH C++

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions.

1. (a) Discuss the formatted console I/O operations and unformatted console I/O operations.

   (b) How to declare, initializing and accessing the array elements?

2. Write a C++ program to find the area of a circle, rectangle and triangle using function overloading?

3. What is a friend function? What are the merits and demerits of using a friend function?

4. Explain about constructor and destructors. Write a C++ Program to copy the contents of one object into another using copy constructor.

5. (a) What is Virtual function? What are the rules for Virtual functions?

   (b) Explain how Exceptions are catched in C++.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions.

6. Describe arithmetic, relational and bitwise operators in C++.

7. What is inline function? What are the advantages of inline function?

8. What is static data member? What are the important characteristics of the static member variable?

9. What are the rules for overloading operators?

10. What is the difference between pointer and reference variable?

11. C++ allows nested classes are not? If Possible give an example.

12. Write about Hybrid inheritance with an example.

13. What is class template? Give its syntax.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. Define encapsulation.

15. Define early and late binding.

16. What is an exception?

17. Give any two string handling functions.

18. Define template.

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(DMSIT 23)

M.Sc. DEGREE EXAMINATION,
DECEMBER 2019.
Second Year
Information Technology
TCP/IP

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions from the following.

1. Explain about Wide area and local area networks.

2. Explain about address resolution protocol.

3. Explain about UDP protocol.

4. Explain about BGP.

5. Explain about Mobile IP.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions from the following.

6. Explain about the history and scope of the Internet.

7. Explain about application level interconnection..

8. Explain about determining an Internet address at startup.

9. Explain about Internet datagram.

10. Explain about TCP segment format.

11. Explain about Gateway-to-Gateway protocol.

12. Explain how to send data through a socket.

13. Explain about DHCP message format.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. What is the function of an IP rooter?

15. What is a virtual network?

16. What is out of band data?

17. What is a hidden network?

18. What is a socket?

(DMSIT 24)

M.Sc. DEGREE EXAMINATION,
DECEMBER 2019.
Second Year
Information Technology

DATAMINING AND TECHNIQUES

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions.

1. (a) What is meant by data transformation? Describe different data transformation methods.

   (b) Discuss various datamining tasks.

2. Explain about multilayer perceptron for regression and classification.

3. Explain in detail about EM algorithm with example.

4. Discuss about agglomerative and divisive clustering methods.

5. Explain about linear models and generalized linear models for regression.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions.

6. State different distance measure between numerical and categorical attributes.

7. Explain about data summarization with example.

8. Briefly explain about vector space algorithm for text retrieval.

9. Write about stochastic components of model structures.

10. What is multivariate parameter optimization? Explain.

11. Write the score functions for predictive models.

12. Briefly explain about k–nearest neighbor classifier.

13. Write short notes on Online Analytical Processing.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. What is multi-dimensional data?

15. Define support and confidence.

16. What is meant by missing data?

17. What partitioned based clustering?

18. What is decision tree?

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(DMSIT 25)

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

Second Year

Information Technology

CRYPTOGRAPHY AND NETWORK SECURITY

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions.

1. What are the different transposition techniques? Explain.

2. Write about the following in AES cipher:

   (a) Substitute Bytes Transformation

   (b) Shift Rows Transformation

   (c) Mix Columns Transformation

   (d) AddRound Key Transformation

3. Explain Sub key generation Process in Simplified DES algorithm with example.

4. Write about RSA key generation and encryption algorithm in detail and also specify its limitations.

5. Describe the security services provided by digital signature. Write and explain the Digital Signature Algorithm.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions.

6. Explain the various active attacks? What security mechanisms are suggested to counter attack active attacks?

7. What is the difference between message integrity and message authentication?

8. What is a ring and a commutative ring? Differentiate.

9. Explain Blowfish encryption algorithm.

10. Explain the avalanche effect in DES.

11. Write two properties of prime numbers.

12. Explain about host based and network based intrusion detection system.

13. What is firewall? What are the different types of firewalls?

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. Define diffusion and confusion.

15. What is the role of S-Box in DES?

16. What is meant by relative prime?

17. Define Birthday Attack on Digital Signatures.

18. What is symmetric key cryptography?

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(DMSIT 26)

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

Second Year

Information Technology

ARTIFICIAL INTELLIGENCE

Time : Three hours Maximum : 70 marks

SECTION A — (3 × 15 = 45 marks)

Answer any THREE questions.

1. Discuss different problem characteristics with suitable example.

2. (a) Solve the following crypt arithmetic problem : SEND + MORE = MONEY

   (b) Illustrate best first search algorithm with example.

3. Discuss about various approaches of knowledge representation.

4. (a) What is augmented problem solver? Explain it with suitable example.

   (b) Write a procedure to convert well – formed formula into clause form.

5. Discuss in detail about case based reasoning and knowledge acquisition.

SECTION B — (5 × 4 = 20 marks)

Answer any FIVE questions.

6. State and justify Water jug problem as state space approach.

7. Briefly explain about AO* algorithm.

8. Write about simulated annealing.

9. Explain resolution theorem in propositional logic.

10. Differentiate monotonic and non-monotonic reasoning.

11. Write short notes on Justification Truth Maintenance System.

12. Explain how the Bayseian network used to represent uncertainty.

13. Write about rule based expert system.

SECTION C — (5 × 1 = 5 marks)

Answer ALL questions.

14. Define heuristic function.

15. Define resolution.

16. Define natural deduction.

17. State Turing test?

18. What is meant by Ontology?

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